

Remarks

This amendment is being submitted in response to the first Office Action dated February 21, 2007 in connection with the above captioned application. The Office Action has been carefully reviewed, especially the broad interpretation of Holmes et al., which prompted substantial structural amendment language. The following response is offered in an attempt to advance claims 1-2, 4-5, 7-10, 12-17, and new claims 18-20 to allowance. Claims 1-2, 4-5, 9-10, and 14-17 have been amended and claims 3,6 and 11 canceled. Some dependent claims, namely claims 2, 5, and 10, as well as new claims 18-20 contain various limitations. If the limitations in those claims advances patentability the Examiner is requested to identify the specific limitation(s) that do so.

In view of Holmes et al. emphasis has been placed on the use of a separate interior heat transfer zone (92 in Figs. 2, 3, 5, 6 and 7) which has air feed tubes 34 passing therethrough where the feed tubes have an annular space 98 around their exterior, which annular space passes combusted exhaust product from the separate reacted fuel – reacted air combination chamber 67. Emphasis has also been placed on the low temperature air manifold feed plenum 80 and flexible air feed transport tubes 82. Description of these elements which have been inserted or more fully described in the claims is found in the figures and in the specification, for example, at page 8, lines 20-26; page 9, lines 4-6, 12-18; page 10, lines 13-21 (inserts and electric heating element); lines 22-29 (laminar flow); page 11, lines 19-28 (annular passages); page 12, lines 28-31 (heater panel). Advantages of this advanced technology are described on page 14, continuing into page 15 in a series of bullet paragraphs.

A Supplemental Oath/Declaration has been attached as requested by the Examiner, signed and dated by all the inventors. If there is any problem with this Oath/Declaration applicants request to be promptly notified.

Oath/Declaration

Supplemental Oath/Declaration is attached as mentioned previously. The missing citizenship of inventor M.W. Riggle has been inserted.

Specification

All objections have been attended to and one additional mistake relating to the exhaust chamber “96” which passes hot exhaust stream 20 has been corrected in the paragraph starting on page 8, line 20 and ending on page 9, line 3, consistent with Figs. 2, 3, 4, 5, 6 and 7.

Claim Objections

All the claim objections to claims 14 and 15 have been corrected.

Claim Rejections – 35 U.S.C. § 112

The term “low temperature materials” have been more completely defined in amended claims 2, 5, and 10.

Claims 16 and 17 are made dependent on claim 13 as correctly asserted by the Examiner.

All claims should now even more particularly point out and distinctly claim the invention.

Claim Rejections – 35 U.S.C. § 102

Claims 1-6 and 15-17 are rejected as anticipated by Holmes et al. Holmes et al. does not teach or suggest either connecting air feed tubes in a sealed manner to a manifold feed plenum through at least one flexible air feed transport tube, as shown in applicants Fig. 2, tube 82 connecting to manifold feed plenum 80, and claimed in amended claims 1, 2, 4 and 5.

Holmes et al. does not teach or suggest a separate heat transfer zone (92 in Figs. 2, 3, 5-7) between separate reacted fuel – reacted air combustion chamber (38 in Figs. 2, 3, 5-7) and air manifold feed plenum (80 in the Figs.), where that zone passes air feed tubes through the zone to create an annular space (98 in Fig. 2, 3, 6) through which combusted exhaust product stream passes from the separate combustion, chamber, as shown in the Figs. and claimed in amended claims 1, 4, 15 and 17.

Holmes et al., while a pertinent reference teaches only combustion chamber 94 with combusted spent fuel 16 exiting (see Holmes et al. Fig. 2), where there is no separate heat transfer zone above, only air plenum 50, and where combusted fuel does not pass in an annular passage around air tubes within a heat transfer zone. The exhaust or

combustion chamber cannot in any way be considered to be the interior heat exchanger zone claimed by applicants in amended claims 1, 4, 15 and 17. Claims 3 and 6 are canceled.

Applicants submit that claims 1, 2, 4-5 and 15-17 are not taught or made obvious by Holmes et al.

Claim Rejections – 35 U.S.C. § 103

Claims 9-11 are rejected under 35 U.S.C. § 103 as being obvious and unpatentable over Holmes et al. in view of Fischer et al. The Examiner states that Holmes et al. does not teach an air pump for the entry air but that Fischer et al. does. Applicants concede Fischer et al. in Column 4 teaches pump P to furnish oxygen to pipe 8 as required in element 4) of applicants' claim 9.

However, applicants' claim 9 also now requires that the interior heat transfer zone contain an annular space around oxidant feed tubes passing therethrough, a separate combustion chamber, and a separate heat transfer zone. The same arguments stated above in the Holmes et al. 35 U.S.C. § 102 rejection apply and are incorporated here, and Fischer et al. is not seen as supplying what Holmes et al. lacks to make applicants' claims 9-11 obvious to one skilled in the art at the time the invention was made. In addition, amended claim 10 specifies use of materials useful below 800°C not contemplated by either Holmes et al. nor Fischer et al. Claim 11 is cancelled.

Applicants respectfully submit that neither Holmes et al. nor Fischer et al. make obvious applicants' amended claims 9-10; and for that matter, neither, taken alone or in combination either teach or make obvious applicants' amended claims 1-6 or 15-17.

Claim 7 is rejected under 35 U.S.C. § 103 as being unpatentable over Holmes et al. in view of WO 02/54519 = equivalent document to Akikusa et al. U.S. Publication No. 2003/0134174 A1 (relied upon for translation).

The Examiner states that Holmes et al. does not teach an internal heater panel surrounding the electrochemical reaction chamber, but that Akikusa et al. teaches heater 32 in Fig. 1. In column 4, Akikusa et al. teaches a second heater wound around the outer peripheral surface of fuel cell 11 in the inner case 46. Recognizing this, applicants' claim 7 will stand or fall on the patentability of its independent claim 4.

Claim 8 is rejected under 35 U.S.C. § 103 as being unpatentable over Holmes et al. in view of Draper et al. U.S. 4,664,986.

Examiner submits Holmes et al. does not teach air feed tubes with metallic conducting inserts. Draper, Figs. 6, 7 & 8 teach heat conducting inserts. Claim 8 will stand or fall based on its independent claim 4.

Claim 12 is rejected under 35 U.S.C. § 103 as being unpatentable over Holmes et al., Fischer et al. and further in view of WO 02/54519 = Akikusa et al. (U.S. Publication No. 2003/0134174 A1). Akikusa et al. teaches second heater 32 wound around outer peripheral surface of fuel cell 11. Claim 12 will stand or fall based on its independent claim 9.

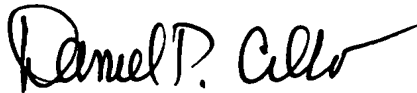
Claim 13 is rejected under 35 U.S.C. § 103 as being unpatentable over Holmes et al. and Fischer et al in view of Draper et al; and Claim 14 is rejected under 35 U.S.C. § 103 as being unpatentable over Holmes et al. in view of Fischer et al. and in view of Gardner et al. Gardner teaches a valve 78 in the air inlet to a SOFC fuel stack. Claims 13 and 14 will stand or fall based on its independent claim 9.

Summary

All outstanding issues are believed to have been addressed. In view of the foregoing arguments and amendments, Applicants respectfully submit that amended claims 1-2, 4-5, 7-10, 12-17 and new claims 18-20 have been substantially amended in view of the art and are in condition for allowance; and applicants respectfully request reconsideration and allowance of those claims.

However, any suggestion by the Examiner as to deletion or modification of claim language to present patentable subject matter would be greatly appreciated.

Respectfully submitted,

A handwritten signature in black ink, reading "Daniel P. Cillo". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

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